Space Weather Forecast

Issued on Tuesday, 09 April 2024 at 13:06 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: No significant activity.

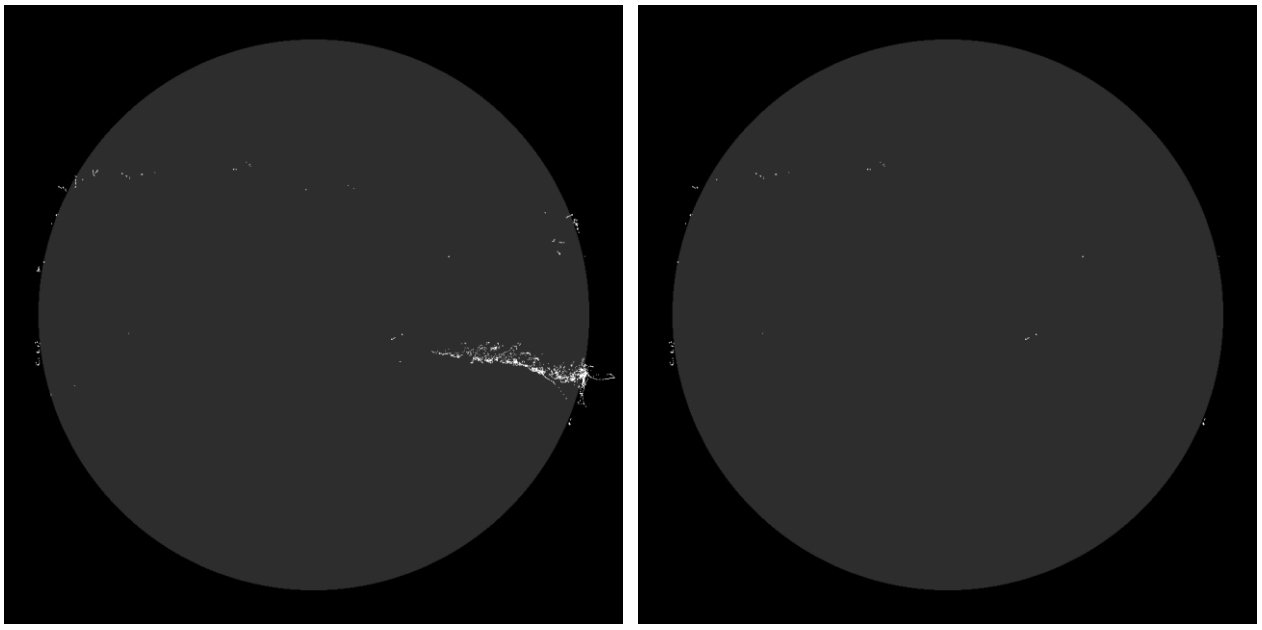
Analysis of Space Weather Activity over past 24 hours.

Solar Activity: Solar activity has remained low in the period, with the X-ray trace languishing below even Common-class for the vast majority of the past 24 hours in a trace reminiscent of solar minimum. An isolated bottom-end Common class flare was observed at 09/0353UTC from a now faded sunspot in the northwest.

There are now five remaining active regions on the Earth-facing side of the Sun. There was slight areal growth seen in a region in the southeast, and slight proliferation of minor spots to the north of the main spot in an active region near the middle of the Sun, with other regions stable and unremarkable.

The current facing side is heavily populated by 'filaments' (arcs of plasma) - perhaps rendered more durable by the lack of flares to de-stabilise them. Despite this, the only activity visible on satellite imagery was a probable far-sided northwest-directed Coronal Mass Ejection (CME), with no effect anticipated at Earth. No Earth-directed CMEs were in evidence.

Figure 1: SIDC ROB-processed X-ray flares of Common-class and above for the past fortnight (left) and past week (right). Note the very significant contribution from the southwest quadrant group (white pixels in lower left image). This sunspot region has been crossing the far side in the past week (hence much quieter right hand image). This is due over the eastern solar horizon to end the current four-day period.



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Solar Wind / Geomagnetic Activity: The solar wind showed a probable slow regime, with the solar wind speed generally with typical background levels. The number of particles in the solar wind was also at background levels over the same period. The associated magnetic field was also mainly subdued, but with a slight rise seen as the period progressed to slightly elevated values in the current UTC morning.

The net result of the above solar wind measures was mainly Quiet geomagnetic activity.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to very low activity is expected at first, this potentially increasing into the coming UTC weekend as a previously-active large sunspot group starts to return over the eastern solar horizon.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs feature in the current forecast. Possible fast winds in the period are likely to be subdued, and although spells of Active intervals are possible, much of the coming four days should remain Quiet.

Energetic Particles / Solar Radiation: Solar radiation storms are considered a very low risk in the period given the lack of appropriate sunspot regions.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

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Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	5	10	15	40
Very Active	R3 to R5 X	No	1	1	1	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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